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W274 Black Root Rot of Tobacco

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W274

Plant Diseases

Black Root Rot of Tobacco

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Black root rot, caused by the fungus *Thielaviopsis basicola,* can be a serious problem where susceptible tobacco varieties are planted in fields that have not been rotated well. It is primarily a concern in dark tobacco. Because of the prevalence of resistant varieties, black root rot is not the problem in burley that it once was.

Symptoms

Plants infected with black root rot wilt rapidly during the hottest part of the day and recover during the evening hours. This wilting and drooping of the leaves is especially noticeable on hot, sunny days following a rainy period. Affected tobacco crops typically show an uneven growth pattern, caused by varying degrees of stunting (see photo). Root systems of infected plants are characteristically reduced and stubby, with dark tips.

Factors Influencing Black Root Rot

Soil pH

Black root rot is usually less severe in soil with a pH below 6.5, for unknown reasons. The severity of black root rot decreases as the soil pH decreases. The threat of black root rot is the reason for the pH recommendations for tobacco: 6.1 to 6.5 for burley and 5.6 to 6.0 for dark tobacco, which is more tolerant of low pH than burley.

Organic Matter

Certain types of green manure cover crops can affect black root rot severity. The by-products of decomposition of barley and rye residues in the soil cause tobacco roots to be more susceptible to black root rot. High amounts of any type of undecomposed organic matter, including cover crops and animal manures, can increase severity.

Temperature and Moisture

Infection of the roots is favored by conditions that are not optimal for plant growth, such as cool weather. Wet soil aids the infection process, but damage is often more severe under the stresses of hot, dry weather.

Control

Crop Rotation

The causal fungus survives in the soil for several years. Long rotations (three to four years) are most effective in controlling black root rot, but where this is not practical, a two-year rotation may help. Avoid leguminous crops, such as clover, vetch, alfalfa and soybeans. Crops suggested for rotation with tobacco include small grains, grasses and com.

Cover Crops

Avoid barley and rye cover crops if black root rot is a threat. Incorporate any type of cover crop early in the spring to allow time for as much decomposition as possible before the tobacco plants are set in the field.

Soil Reaction

Maintain soil pH in the 6.1 to 6.5 range for burley and 5.6 to 6.0 for dark tobacco. A soil test should be taken to determine the need for lime and fertilizer.

Resistant Varieties

Resistant varieties should be planted if black root rot is considered a threat. Refer to http://tobaccoinfo.utk.edu/PDFs/VarietyGuides/2011BurleyVarietyGuide.pdf for a list of recommended burley varieties and to http://tobaccoinfo.utk.edu/PDFs/VarietyGuides/2011DarkTobaccoVarietyGuide-01-19-11.pdf for a list of recommended dark varieties

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